



March 1948

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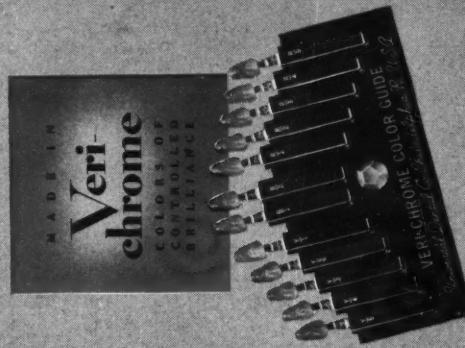
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Dental

Digest

MARCH 1948

About Our CONTRIBUTORS

With the permission of *The Dental Record*, TRICHLORETHYLENE AND DENTAL ANALGESIA has been adapted from an original article appearing in the September 1946 issue of that journal. The author is Eric A. Scher, M.B., B.Sc., B.D.S., of Cork, Eire. His extensive experience with this compound indicates that it can be used safely and to advantage for analgesia in dental practice. It is a supplement to, or substitute for, local anesthesia.

LOUIS O. PASETTI, D.D.S. (Atlanta-Southern Dental College, 1941) presents a chart to simplify the DIFFERENTIAL DIAGNOSIS OF DENTAL PAIN. Posted in the laboratory, it will be available for quick and frequent reference. Doctor Pasetti served as a Captain in the Army Dental Corps in general hospitals both in the States and overseas. He emphasizes endodontia in his practice and is a charter member of the American Association of Endodontists.

JAMES D. JACOBY, D.D.S. (College of Physicians and Surgeons, School of Dentistry, 1934) is a newcomer to these pages. He presents a procedure for constructing removable clip-on appliances of acrylic for spaced or irregular anterior teeth. Mr. Edward Cunningham of the Zenith Dental Laboratory, assisted with the laboratory techniques involved.

IRVING S. GLASNER, D.D.S. (New York University, College of Dentistry, 1944) reports a case of xerostomia caused by faulty dentures.

GABRIEL WEISS, D.D.S. (The Thomas W. Evans Dental Institute, University of Pennsylvania, 1941) reports on the rehabilitation of a case involving a deep overbite. This is his third DIGEST presentation in as many years, drawn from his general practice.

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TRICHLORETHYLENE

and Dental Analgesia*

ERIC A. SCHER, M.B., B.Sc., B.D.S., Cork, Eire

DIGEST

Trichlorethylene was first described in the scientific literature in 1864. Its extensive use as an anesthetic agent in surgical, obstetric, and dental practice, however, is largely a war-time innovation.

In this report:

1. Some of the important physical and chemical properties of trichlorethylene are briefly described.

2. Advantages of and contraindications for the analgesic use of the compound are listed.

3. Details and specific applications of two methods of administration are presented.

4. General and particular observations on 521 cases are made and inferences drawn.

5. The principal disadvantages are: resistance to analgesia in 9 per cent of cases; excessive salivation; certain other side reactions and sequelae. The percentage of the latter are small.

6. The conclusion reached is that trichlorethylene can be used safely for analgesia with the simple apparatus devised and has a definite field of usefulness in dental practice, especially as a supplement to, or substitute for, local anesthesia.

Properties of Drug

Chemical—1. Trichlorethylene is an unsaturated derivative of ethylene.

2. It is unstable. To maintain its stability in stock solutions, colored stoppered bottles of the drug should be kept in a cool dark cupboard.

(Emphasis is laid on the possibility of toxic end-products of decomposition arising; namely, phosgene, dichloracetylene, carbon monoxide, and hydrochloric acid. Dichloracetylene is probably the cause of the various nerve palsies which have been reported to occur after trichlorethylene anesthesia. In all these cases, dichloracetylene was produced by using trichlorethylene in a closed circuit with soda lime, which acts as a catalyst. This method of use has been warned against, as it is dangerous.)

Physical—1. Trichlorethylene is a clear, colorless, mobile, heavier-than-water liquid which is less volatile than ether but more so than chloroform.

(Trilene, the brand of trichlorethylene used herein, is a specially purified form of trichlorethylene to which 0.01 per cent of thymol has been added, as a stabilizer, to retard decomposition; and 1 in 200,000 of "Waxoline blue," to render the liquid a pale blue color and thus distinguish it from chloroform.)

2. Trichlorethylene is neither as pungent as ether nor as sickly smelling as chloroform. However, its odor is not unpleasant, and it is advisable to encourage the patient to associate it with the sweetish, fruity aroma of peaches or pears. An olfactory advantage is that the odor of trichlor-

ethylene does not permeate throughout the surgery, as would ether or chloroform; actually, it is not noticeable a foot away from the patient-operator area. After twelve to fifteen inhalations, the patient adjusts to the odor.

3. Contrasted with ether, which is highly inflammable, trichlorethylene, at the ordinary atmospheric temperature and pressure of the British Isles, cannot be ignited in air; and it is nonexplosive unless the air is abundantly enriched with oxygen. This advantage permits the use of the electrocautery with trichlorethylene without the hazard of ignition.

Physiologic Effect—The following observations have been made from human and animal administrations: (1) The action of trichlorethylene is nearer that of ethyl chloride than that of chloroform; (2) as it is not very volatile, a little goes a long way. It is important to remember these points when using the drug to produce analgesia. Overdosage leads to respiratory failure which is more likely to occur in the inductive stage. The advice to "go slowly and cautiously" is noteworthy as an overdose may easily be given.

Advantages

Trichlorethylene presents most of the characteristics of a good analgesic substance:

1. Induction is quick, and analgesic action is rapidly reversible.

2. It is easily controlled, and administration is not complicated.

3. The effects are predictable in seventy per cent of cases.

4. Undesirable side reactions are few compared with the total number of observations.

*Adapted from THE DENTAL RECORD 66:213-230 (September) 1946.

5. The percentage of aftereffects is small.

6. Administration is usually considered pleasant by the patient.

7. The therapeutic quotient for the production of analgesia is sufficiently high to be safe.

(The therapeutic quotient is the ratio between the minimum lethal dose and the minimum dose necessary to produce unconsciousness.) Two and a half times the narcotic dose of trichlorethylene is required to produce death.

8. Portability. The drug can be used in the patient's home or in the surgery with equal ease and with simple apparatus. A one-ounce bottle of trichlorethylene and a dental napkin are useful adjuncts to the emergency kit.

9. Economy. A little goes a long way, and the price is far below that of nitrous oxide. Liquid used in a twenty-minute analgesic session costs about half a cent.

10. Medical supervision is unnecessary when using the methods of inducing analgesia to be described.

Contraindications for Use

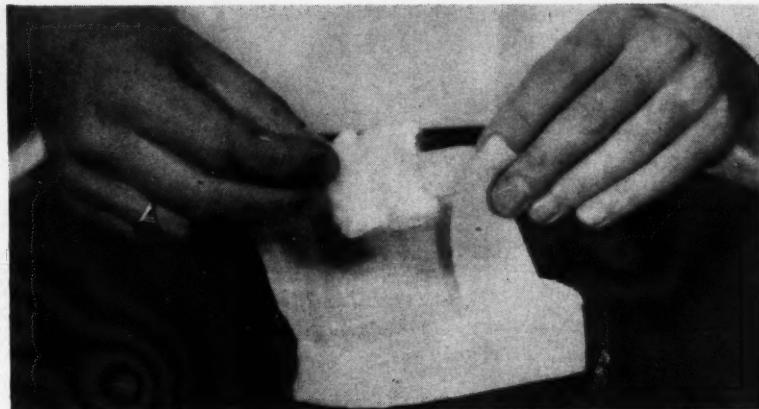
1. When the duration of surgery is doubtful or when it is likely to be complicated.

2. Patients under fifteen, as a rule.

3. Obvious signs and symptoms of blood, cardiac, renal, pulmonary, or hepatic disease. In such cases, nitrous oxide analgesia, with ample oxygen, is safer than trichlorethylene; suitable local anesthesia is still safer.

Premedication

The administration of hypnotic drugs to patients is *not* recommended. Therapeutic premedication with grains 10 of aspirin, grains 15 of potassium bromide, or grains 1½ nembutal an hour beforehand is definitely useful in counteracting an adverse mental attitude. Selection of the drug should be based on an individualized consideration of each patient. Sedation reduces oxygen utilization by nervous tissues and thereby decreases reflex irritability. In conjunction with trichlorethylene analgesia, sedatives also lower the threshold of sensitivity to pain. Heavy cigarette



1. Two-inch square pad used for administering a single dose of trichlorethylene. A dental napkin is folded around a split cotton wool roll and the pad saturated with the drug.

smokers and alcoholics require stronger premedication.

While the patient is in the analgesic state, the operator's conversation ought to be encouraging to him. Comforting and praising remarks assist in his management.

1. Prior to administration, it is advisable to explain to the patient, in simple words, what is going to be done. This explanation instills trust and confidence, attitudes of paramount importance in smoothly inducing analgesia.

2. It is also advisable to request the patient to empty his bladder beforehand.

3. Always have a third person (preferably female) present when administering trichlorethylene.

4. Always obtain parental consent before analgizing a person under 21 years of age.

Single Dose Analgesia

Technique of Administration—A dental napkin, cotton wool roll, esthesiometer, and bottle of trichlorethylene are at hand. The cotton wool roll is split longitudinally and placed in the center of the napkin which is folded around it to form a square pad about two by two inches (Fig. 1). The pad is held on one hand, approximated to the orifice of the bottle, and saturated by inverting the bottle once or twice.

1. The pad is held in the hollow of the palm. The cupped fingers are positioned two or three inches from the patient's nose (Fig. 2). The patient is requested to relax; he is encouraged to breathe the "sweet air" deeply and slowly, and the pad is gradually brought nearer the nose. The wet pad should not touch the skin on the tip of the nose, as trichlorethylene is a cutaneous irritant.

(A slow approach is absolutely necessary. Coughing and laryngeal



2. Saturated pad is held in the hollow of the palm two or three inches from the patient's nose for single dose analgesia.

spasm frequently result if the initial breaths contain too much trichlorethylene. The pungency of trichlorethylene, in concentrated form, creates an undesirable impression of suffocation in the patient's mind. This feeling is further aggravated by an irritating cough. An unhurried procedure leads to a smooth induction. If the patient exhibits involuntary breath-holding, withdraw the pad and permit two or three inspirations of pure air. These will correct the condition.)

2. After the patient has breathed five or six times, the operator's other hand is so placed that air *cannot* be easily inspired through the mouth or under the lower border of the pad hand (Fig. 3). This manipulation concentrates the inhaled mixture of trichlorethylene and air. It also assists in preserving some of the heat in the exhaled air, which increases the rate of volatilization of trichlorethylene and hastens its action.

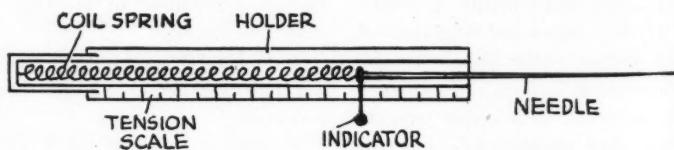
3. The depth of analgesia is measured with an esthesiometer (Fig. 4). Essentially, this instrument consists of a sharp needle point (which may be flame-sterilized) attached to a spring, the tension of which is indicated on a graduated scale (Fig. 5). The dorsal thenar skin of the patient's



3. Concentrating inhaled mixture of trichlorethylene and air and hastening volatilization by conserving heat in exhaled air.



4. Measuring depth of analgesia with esthesiometer (a sharp needle point attached to a graduated scale). An ordinary pin may be used to gauge analgesia.



5. Diagram of esthesiometer

right hand, placed on his chest, is pricked with the esthesiometer needle. He is asked if the feeling is one of pain or bluntness. The more tension on the spring, the more painful will be the stimulus; the less the stimulus is felt, the deeper is the analgesia. (An ordinary pin may be used to gauge analgesia.)

Indications—This method of producing analgesia has been found most useful for extracting abscessed teeth, paracentesis of a cyst, incising an alveolar abscess, pulpotomy for

acute pulpitis, curetting a dry socket, limited bone (alveolar) trimming, suturing gingival tissue, plugging to allay hemorrhage, or for cauterizing exuberant gingivae.

With the technique described, analgesia lasts for approximately one or two minutes. It is useful for removing incisors or premolars which are not too securely held in pyorrhoid alveoli. The technique can be recommended as an adjuvant to the extraction of multirooted, firmly embedded teeth under local anesthesia; it has also

been found excellent for neurotic and hypersensitive patients. Premedication, local anesthesia, and trichloroethylene reinforce each other synergically, when used as described, and have proved a merited trio worthy of continued use.

Continuous Auto-Analgesia

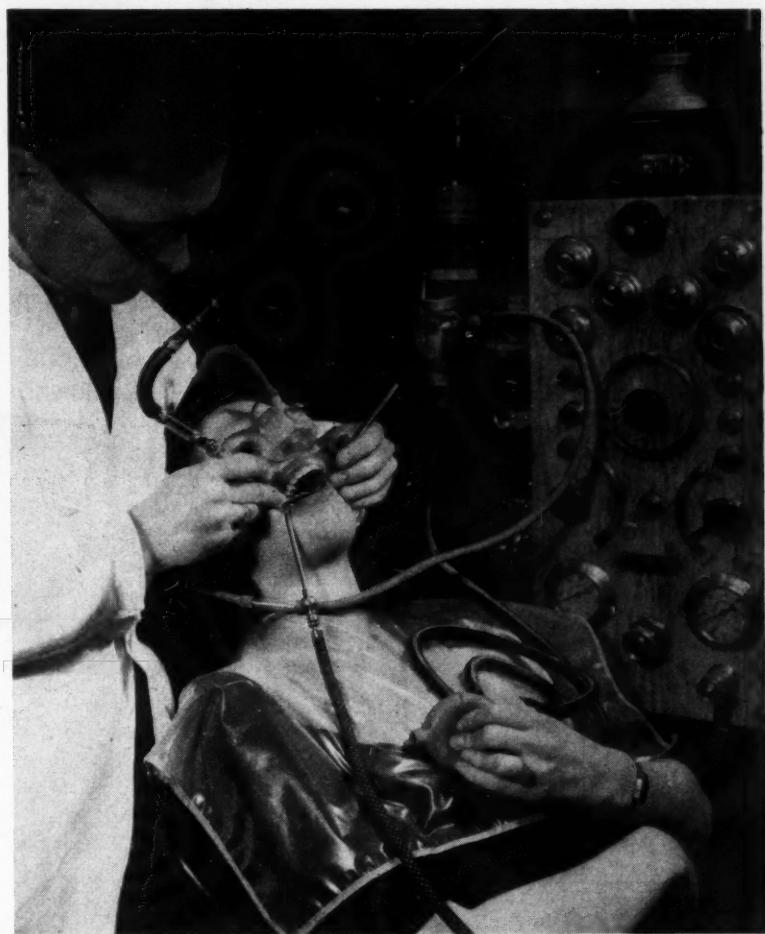
Figure 6 portrays the layout of the equipment used. Figure 7 diagrammatically illustrates the equipment.

Purpose of Apparatus—Trichloroethylene is not so volatile as ether or ethyl chloride; nevertheless, it will pass into a state of vapor at temperatures far removed from its boiling point (85° Centigrade). Evaporation occurs only at the exposed surface of a liquid. The object of the apparatus, therefore, is to particulate the liquid so that a far greater air-liquid surface ratio is effected within the confined space and evaporation thus facilitated.

The pressure exerted in a closed space by the vapor of a liquid in contact with the liquid is known as the maximum vapor pressure of the liquid *at the temperature of the experiment*. If the temperature is elevated, there will be an increase in vapor pressure. A considerable increase in temperature would probably break down trichlorethylene into products which are noxious; but warming the vaporizing jacket with a towel saturated in water heated to about 75° Centigrade markedly increases volatilization and so facilitates the induction of analgesia in subjects who are resistant.

Administration—The application of the technique is tolerated with far less apprehension if the purpose of the apparatus is explained simply and concisely to the patient. An encouraging monologue helps to maintain cooperation.

Operating Hand Bulb: The operator should commence the alternate squeezing and relaxing of the hand bulb, firmly and sharply, at the rate of 15 to 30 pulsations per minute. This is demonstrated to the patient who is invited to continue the process in a like manner. If analgesia should deepen too far, the patient tires of bulb squeezing and discontinues un-



6. Apparatus for producing continuous auto-analgesia in operation.

til the stimulation of continued drilling causes him to renew activity.

Diluting Vapor: At the start of administration, the Venetian window should be fully opened in order to avoid a sensation of choking on the part of the patient, caused by exhaling against pressure. Opening the Venetian window dilutes the vapor with air and lowers the internal pressure in the apparatus, thus decreasing the vapor pressure. The initial potency and pungency of the inspired mixture is reduced. Respiratory spasm, which might immediately antagonize a nervous patient, may thus be avoided.

Relieving Nasal Congestion: Request the subject to breathe out *through his nose* at all times. Patients who complain of nose stuffiness may

be relieved by the preliminary nasal instillation of a few drops of an oily solution of ephedrine to shrink the mucosa.

Accelerating Analgesia: After nine or ten respiratory excursions, the window should be partly closed, thereby concentrating the vapor pressure, decreasing the air dilution, and accelerating the onset of analgesia which may be tested as previously described. At no time should the window be *completely closed*.

Time Element: The customary latent period prior to the onset of analgesia varies from 1½ to 3 minutes. Cavity preparation should not be commenced prematurely as the patient, in an attempt to avert pain which he either feels or anticipates, squeezes too vigorously and rapidly

and, as a consequence, overdoses himself.

Nose- vs. Mouth-breathing: Occasionally, during established analgesia, remind the patient to nose breathe. Mouth breathing, which may be a fear response, causes a swinging type of analgesia. If the patient is nose breathing efficiently, compliment him on the point. Encouragement induces him to continue the process and helps toward balanced analgesia.

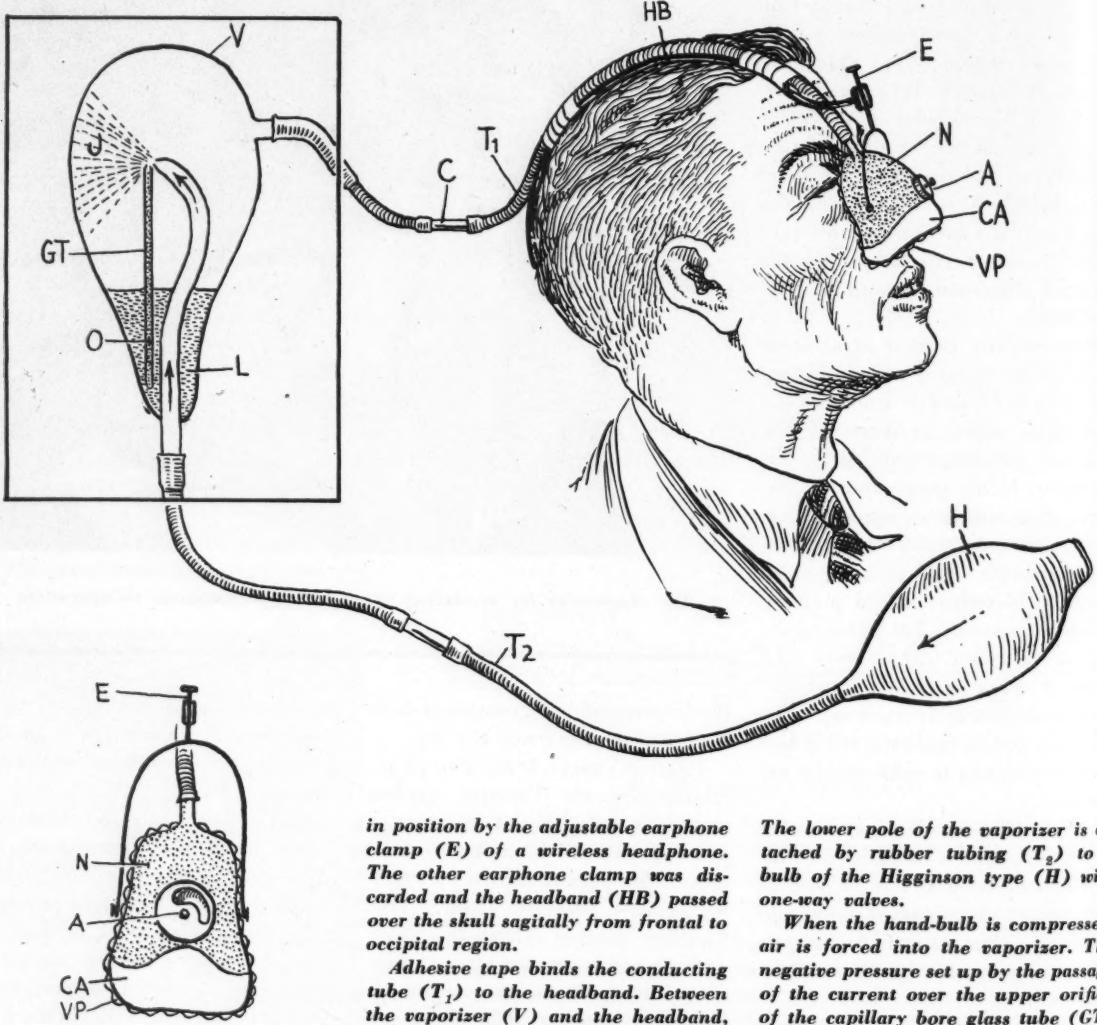
Patient's Head Position. Although there appears to be little likelihood of a foreign body, such as amalgam or a fractured drill head, being inspired under light trichlorethylene analgesia, it is a wise precaution to have a patient's head postured vertically when operating, if possible.

Indications — Auto-analgesia has proved useful for conservative dentistry, especially for obtunding pain during the preparation of sensitive

cervical cavities and difficult root treatments. The use of trichlorethylene analgesia has been advocated for the painful gingival therapy of Vincent's disease.

Results and General Observations

I have used trichlorethylene for analgesia in 521 cases since April 1944. On the whole, results are satisfactory. A brief survey is as follows:



7. An average size nose hood (N) is constructed of acrylic resin. On the anterior surface is an aperture which may be partly closed or completely opened by a revolving Venetian type window, also made of acrylic resin, which is pivoted on a small central steel pin (A). The nosepiece is held

in position by the adjustable earphone clamp (E) of a wireless headphone. The other earphone clamp was discarded and the headband (HB) passed over the skull sagitally from frontal to occipital region.

Adhesive tape binds the conducting tube (T_1) to the headband. Between the vaporizer (V) and the headband, the tube is interrupted by a glass connector (C). A discarded cartridge tube serves the purpose. This is required for filling the vaporizer with trichlorethylene. When the connector and tube are held vertically, the liquid (L) will gravitate to the bottom of the container.

The vaporizer used is one of many varieties, any of which would probably serve the same purpose equally well.

The lower pole of the vaporizer is attached by rubber tubing (T_2) to a bulb of the Higginson type (H) with one-way valves.

When the hand-bulb is compressed, air is forced into the vaporizer. The negative pressure set up by the passage of the current over the upper orifice of the capillary bore glass tube (GT) causes the trichlorethylene to rise through the narrow conduit (O) from the aperture below and be sprayed in a jet of fine droplets against the wall of the vaporizer (J).

Note the spray does not directly enter the exit tube (T_1) of the vaporizer. The tubing (T_1 and T_2) is of sufficient length to allow the patient to expectorate into the cuspidor without restraint.

Sex—Of the 521 cases of analgesia induced with trichlorethylene, 9 per cent were completely resistant to either method of analgesia. Of these, 6 per cent were male; 3 per cent, female.

Age—1. Forty-five children under fourteen were recorded as having had analgesia by the pad-in-hand method; twenty-four of these had satisfactory analgesic sessions. As a rule the younger the child, the more difficult is the administration.

2. No appreciable difference was observed in those subjects whose ages ranged from 20 to 50. Usually, patients over 55 became analgesic more rapidly.

3. Trichlorethylene appears to be most beneficial when used on intelligent adults. This is especially so in relation to self-administration.

Operations—1. One of the most frequently appreciated applications (263 cases) from the patient's viewpoint was the fortification of a previously injected local anesthetic with trichlorethylene analgesia administered by the pad-in-hand method. This technique was used for extractions.

2. Results of trichlorethylene analgesia for cavity preparation varied. In general, I am of the opinion that the drug is useful, especially in those cases where there is a known idiosyncrasy on the part of the patient to procaine local anesthesia. The auto-analgesia apparatus was used for 337 cases because continuous administration is obviously desirable. It was in this series that most of the few untoward after-effects and side reactions were noted. These results are presumably related to the length of time of administration which averaged from ten to fifteen minutes per analgesic session.

3. One hundred and forty-eight cases had trichlorethylene analgesia on more than two occasions, the administrations being separated by intervals of approximately eight days.

Patients' Remarks—1. Nine patients, each of whom were analgesized seven different times reported, on questioning, no ill effects. (As a rule two or three cavities may be prepared at one sitting with diamond drills.)

2. Nine per cent of patients receiving trichlorethylene for restorations derived absolutely no benefit from the drug; 7 per cent reported analgesia partly effective ("dulled the pain"), and the remaining 84 per cent reported analgesia was satisfactory.

Patients' Preferences—One hundred and fifty patients submitted to cavity preparation under local anesthesia and analgesia respectively at different appointments. Forty-three per cent of these stated they preferred trichlorethylene analgesia to local injections; 34 per cent said the reverse, and 23 per cent were undecided.

Trichlorethylene was used for all classes of cavities. The remarks and behavior of patients indicated that its efficiency was greatest in the preparation of class V cavities on the cervices of cuspids and incisors.

Special Features

Induction—In this series, 6 per cent of cases were noted to exhibit dyspnoeic signs of choking, coughing or suffocation. Increased lacrimation due to conjunctival irritation was noted in 5 per cent of cases. (When it occurs, the patient should be directed to close his eyes.)

Analgesic State—Length: Trichlorethylene produces a much longer-lasting analgesic phase than other general anesthetic agents.

Euphoria: This was noted in approximately 42 per cent of cases. As the excretion or metabolism of the drug is rapid, the condition subsides within from three to five minutes after cessation of administration.

Neuritic Phenomena: Four per cent of patients reported neuritic phenomena such as "tingling or pins and needles" in the feet; five persons volunteered the information that their legs felt light or weak; two described stiffness of skin over the cheeks; one said he felt "beautifully warm." All these sensations completely disappeared a few minutes after cessation of analgesia.

Efficiency: Trichlorethylene analgesia is definitely superior to that produced by ether or chloroform and is just as effective, if not more so, than nitrous oxide-oxygen analgesia.

Other investigators have stated that: Trichlorethylene is a prompter and safer central analgesic than chloroform; it is more potent; it is difficult, in using nitrous oxide-air mixture for analgesia, to ascertain the optimal combination. The experience gained from this series of 521 cases concurs with the views of these investigators.

Popularity: One hundred and fifty patients in this group each had nitrous oxide-oxygen analgesia and trichlorethylene analgesia on separate occasions. Of these, 34 per cent preferred the nitrous oxide-oxygen mixture; 7 per cent were undecided. Trichlorethylene is therefore more popular with the majority (59 per cent). Although analgesia induction with nitrous oxide is speedier than that with trichlorethylene, the full effect of nitrous oxide does not last as long. Chloroform and ether are not nearly so pleasant from the patient's viewpoint, the former because of its sickly smell and tendency to subsequent nausea, the latter because of respiratory irritation.

Pulse Rate: Observations on the pulse by palpation in 165 analgesic cases in this series showed no alteration in rhythm. In 60 per cent of these, however, there was an average increase of 22 beats per minute above the rate initially recorded. Tachycardia did not distress the patients.

Bradycardia was noted in 23 per cent of cases, the average slowing of the pulse rate being seventeen beats per minute less than the number initially observed. These pulse rate variations were transient.

Respiratory Rate: Tachypnea is reported to occur frequently during trichlorethylene anesthesia; in this series it was noted in 7 per cent of cases. The condition was corrected by dilution with air. Tachypnea is usually a sign of overdosage, the principal danger of trichlorethylene when the drug is used to full anesthetic effect.

Nausea: Three patients complained of nausea during analgesia but two of these had had heavy meals less than one hour before the session. The drug should not be used for two hours after a meal.

Salivation: Mention must be made of a physical disturbance which was

occasionally annoying when trichloroethylene was used. Marked salivation occurred in 73 per cent of cases after two to five minutes' use. This is contrary to one report describing the use of trichlorethylene for minor general surgery. In actual mouth operations the instrumentation may be held accountable for eliciting a reflex saliva increase which is far in excess of that generally due to operative dentistry. Salivation is equally profuse from

parotid and sublingual ducts. Local anesthesia is, in my opinion, preferable for the preparation of buccal cavities in upper and lower posterior teeth.

Postanalgesia — Adverse after-effects are relatively few and the percentage of occurrence is satisfactorily small: nausea (1 per cent), vomiting (.5 per cent), and headache (2.5 per cent) combined or occurring separately. Giddiness (9 per cent) oc-

curred immediately on rising from the dental chair but disappeared after the patients had been seated for ten minutes.

Postanalgesic inarticulate confusion, during which questions were heard and understood but could not be immediately answered, was noted in one per cent of cases. The condition never lasted more than four minutes after cessation of administration. 22 St. Patrick's Hill.

Use of Baseplate Wax in Occlusal Disharmony

CLYDE H. SCHUYLER, D.D.S., New York

THE USE OF baseplate wax has been found to be the most accurate means of determining areas of premature contact.

Steps

1. Wax forms are prepared to include the entire arch for test purposes.
2. For corrective procedures, wax strips covering half of the arch are more convenient.
3. The forms or strips are warmed and molded over the teeth, the arch being selected where corrective grinding seems desirable.
4. The patient is asked to close very lightly into the wax, stopping at first tooth contact. (Whether checking centric or eccentric positions, the position should be static, not a glide from eccentric to centric.).
5. The wax can be slightly chilled by air or water and removed.

By holding this wax record toward a light, the teeth making first contact can be readily determined. The wax record can then be returned to the

mouth and by the use of an indelible pencil, areas of premature contact marked through the wax.

Versus Dental Tracing Paper

This method of checking areas of premature contact is much more accurate than checking with dental tracing paper. The markings of the paper may lead to erroneous corrective procedures due to: the thickness of the paper, the necessity of using undesirable occlusal force to make markings, and the possibility of a shift in maxillomandibular relation after the primary contact is made which results in a smear over extensive areas.

When inlays, bridges, and other restorations are being inserted, occlusion can be most advantageously checked by the use of wax. Tracing paper often fails to leave a mark on such a highly polished surface, either enamel or metal. Areas of premature contact can be relieved at times by grinding through the wax.

Purposes of Wax Record

1. To determine areas of premature contact.
2. To detect tooth surfaces or restorations which fail to make functional contact in either centric or eccentric positions.
3. To recognize static tooth contact in the centric relation.
4. To avoid primary contacts on tooth inclines.

Objection to Abrasive Pastes

The use of abrasive pastes to correct occlusal disharmony produces the equivalent of excessive tooth wear. A limited amount of wear may improve the functional efficiency of a new dentition just as a limited amount of wear may improve the functioning of any machine. Excessive wear, however, diminishes this efficiency in a machine.

—From *The New York State Dental Journal* 13:461 (October) 1947.

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Differential Diagnosis of DENTAL PAIN

LOUIS O. PASETTI, D.D.S., Tampa, Florida

Condition	Character of Pain	Site of Pain	Type of Pain	Local Tenderness	Effect of Posture	Effect of Thermal Impulses
Pulpitis	Sharp and stabbing	Tooth affected but may be referred to any tooth on the same side of the head.	Intermittent with periods of remission	May or may not be present	Recumbent position intensifies pain.	In early stages cold intensifies pain; in last stages, heat.
Pericementitis	Dull and throbbing	Tooth affected	Constant, increasing with percussion	Slight to severe	Exercise or recumbent position intensifies pain.	Cold may relieve pain; heat does not materially affect it.
Abscessed Tooth	Slight to severe throbbing	Tooth affected	Constant	Mucosal edema over affected tooth.	Recumbent position intensifies pain.	Both heat or cold may relieve pain.
Pressure from impacted tooth	Slight to severe	Area of impaction but may be referred to ear or neck.	Constant	Usually negative	None	None
Pericoronal Infection	Mild to severe	Soft tissues around area of affected tooth	Constant	Mild to severe	None	None
Tic Douloureux	Severe to excruciating	Distribution of trigeminal nerve.	Spasmodic and of short duration.	Extremely sensitive	Slightest movement of face or tongue may incite pain.	Temperature changes may incite pain.

Diagnostic Queries

1. Is the pain sharp or dull?
2. Is it constant or intermittent?
3. Is it localized or indefinite as to location?
4. At what time or under what circumstances is the pain felt?
5. Is it influenced by temperature changes?
6. Is the tooth sensitive to pressure or percussion?

Removable Clip-on Anterior ACRYLIC APPLIANCES

JAMES D. JACOBY, D.D.S., San Francisco

DIGEST

For esthetic purposes only, a removable acrylic splint or clip-on appliance can be utilized to mask spaced or irregular anterior teeth. To cover part or all of an anterior tooth set apart from the other teeth, a single removable acrylic cap can be applied, built out for better contour and contact, which fills esthetically objectionable spaces.

The complete procedure for constructing either a removable acrylic clip-on appliance or a cap is detailed.

Purpose

Patients present themselves to the dentist for esthetic improvement of spaced or otherwise malposed teeth. Such patients are usually stage folk, singers, or public speakers whose teeth are detrimental to their appearance. Because these teeth are usually in perfect condition, the dentist may well hesitate to recommend preparations for porcelain or acrylic jackets.

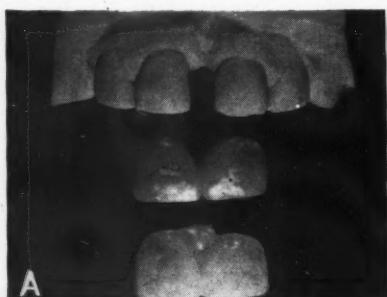
However, he should not hesitate to recommend the construction and use of a removable acrylic cap or clip-on appliance. Such a prosthetic device should be worn in the same spirit as that in which eye-glasses, wigs, or elevator shoes are worn. Appliances are now being worn almost daily by two professional singers, several clothing and photographers' models,

an attorney, and a hat-check girl whose tips have trebled since she started to wear her four-tooth labial acrylic camouflage. A seven-tooth case made three years ago is still in use and in perfect condition.

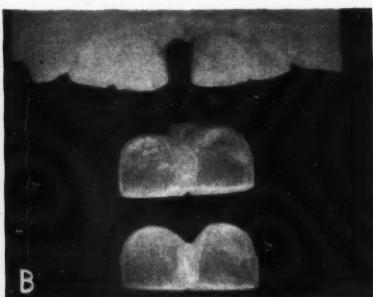
The prospective wearer is told that the proposed appliance is "for esthetics only," that its use for eating is usually contraindicated.

It may be a good idea to make a quick, direct wax-up over the teeth to be covered, using ivory-colored wax; or, better, to take a facial impression in red compound and request the patient to return. Colorless separating fluid used on the resulting model will permit the carving of a removable wax-up to try in place at the next appointment. This waxed appliance can be taken home by the patient for study and family discussion. (The family is invariably enthusiastic.)

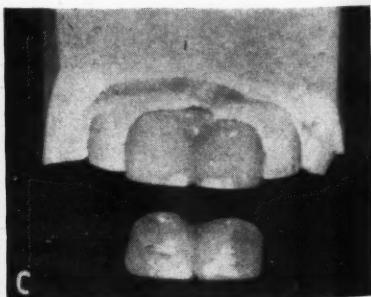
Note: If necessary, a six- or seven-



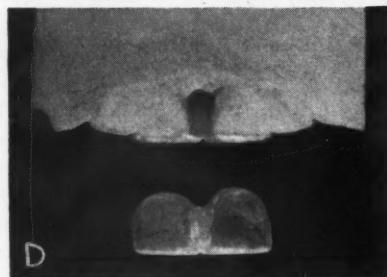
A



B



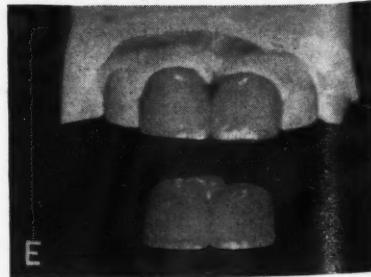
C



D

1. A girl musician, 22 years of age.

(A) Model showing space between maxillary central incisors and two clip-on acrylic appliances, with and without pink acrylic gingival. (B) Lingual view of case 1. Note incisal overlap. (C) Clip-on in place; alternate appliance below. (D) Lingual view of (C). (E) Appliances transposed.



E



A

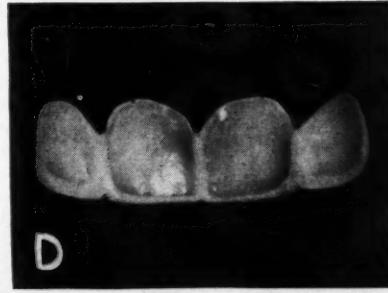


B



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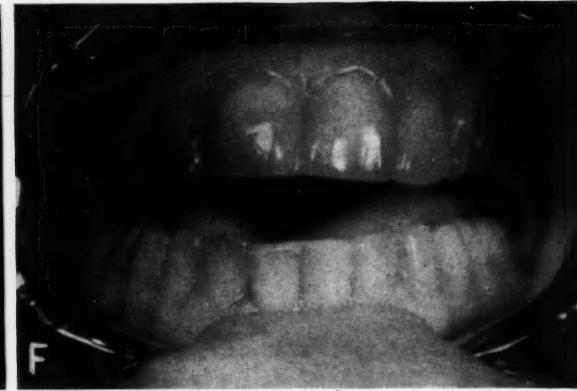
2. Girl singer and actress, 19 years of age.
(A) Four anteriors spaced and irregular. **(B)** Uneven, protruding teeth to be disced, ground, and polished. **(C)** Four-tooth acrylic appliance. **(D)** Lingual view. Note interproximal extensions for retention; also, incisal coverings. **(E)** Appliances locked firmly in place. **(F)** Natural appearance.



D



E



F

tooth facial tooth mask can be made in two sections, each self-retaining.

Procedure

Preparatory Steps—1. Clean and polish all the teeth.

2. Take a full set of roentgenograms, including bitewings.

3. Examine them and mouth, outlining all restorative dental service.

4. Restore carious and missing teeth.

5. Finish margins and contours of all restorations, giving particular attention to the anterior teeth.

6. Use stone and discs to even the incisal edges of upper and lower anterior teeth. (It is recommended that



(G) Close-up of singing position.

protruding angles of teeth be ground back for a better result.)

Impressions, Bite, Shade—1. Take accurate upper and lower colloid or hydrocolloid impressions, air-drying the teeth and working the impression

material between the teeth and into the gingival crevices of the upper anterior teeth before seating the impression tray.

2. Take bite in pink wax.

3. Select shade for acrylic.

Laboratory Procedure—1. Make a duplicate model or pour an additional model if permissible.

2. Mount the case on a simple articulator.

3. Scrape model slightly on gingival tissue area (not tooth) to deepen gingival crevice; this permits polishing case later to gingival line.

4. Wax-up case, using ivory wax; extend wax interproximally, lingually, over incisals and to contact or over-



(A) Before starting case. Note missing laterals and unevenness of incisal edges of centrals. **(B)** Note incisal edges to be evened. **(C)** Acrylic caps for cuspids only. Tooth contours permit complete covering of tooth crown. **(D)** Centrals with incisal edges evened; cupid caps in place. (No additional retention necessary; caps snap over slight undercuts gingivally from contact points.) **(E)** "Speaking view." Note evenness of upper and lower incisal edges.



B



C



D



E

3. Girl singer and actress, 20 years of age.

lap proximating teeth. (Note: A four-tooth clip-on appliance usually gives a better balanced result for it enables one to carve suitable widths on central and lateral teeth.)

5. Invest, teeth up, as with similar bridges.

6. After separation of the flask, coat with E-Z Foil or suitable coating liquid.

7. Pack acrylic in shade desired. (Acrylic injection technique is best.)

8. Cure in water at 160° Fahrenheit for nine hours (or overnight in closed vulcanizer).

9. After cooling, separate. Acrylic will usually spring loose from model.

10. Trim feather edges and polish; keep moist.

A vacuum investment apparatus has been used for our recent cases to

substitute water for the air residual in the finished acrylic, the purpose being to give possible odor resistance and shade stability. The appliance is placed for several minutes in a glass of water under the bell jar and the air exhausted. Insufficient time has elapsed to prove this point.

11. Adding pink acrylic at gingival interproximals may aid esthetics and eliminate dark spaces between the contact points and the gingivae.

Try-in and Final Steps—1. Most cases will go directly to place.

2. Slight trimming interproximally should relieve binding undercuts. If wax and acrylic extend lingually just past normal contact points, excellent

retention of the appliance is assured.

3. Additional carving and finishing in the mouth with stones and discs may improve incisal contours.

4. Check and relieve bite so that occlusion is not impaired; repolish case.

Note: No case thus far constructed has required the additional retention of a denture adhesive; but this can be used sparingly if desired.

5. Caution patient that appliance is for esthetics, not for mastication.

6. Advise patient to keep appliance, not in use, in cold water containing some such cleanser as Polident.

Summary

1. Patients having spaced or malposed upper anterior teeth, who make public appearances, frequently will

not permit or tolerate tooth preparations for permanent porcelain or acrylic jackets. Objectionable spaces can be masked, however, by a removable acrylic clip-on appliance, worn when desired.

2. Such an appliance depends upon interproximal retention.
3. Single tooth caps or any possible number of teeth can be linked and covered.
4. Sectional cases, each section self-

retaining, are successful for long-span appliances.

5. Pink acrylic gingival interproximals may be added if desired.

516 Sutter Street.

XEROSTOMIA: A Case Report

IRVING S. GLASNER, D.D.S., New York

DIGEST

Dryness of the mouth (xerostomia) of several years' standing was overcome in an elderly edentulous patient by the construction of dentures which restored vertical dimension and thereby brought about the resumption of normal salivary flow.

A WOMAN, aged sixty-eight, presenting herself at the Department of Welfare Prosthetic Clinic, complained of an ill-fitting full upper denture. She had been edentulous for twenty-nine years. During this time she had been unable to wear her full lower denture except intermittently in the past few years. Her upper denture had been worn with the aid of commercial adhesives.

During the four years previous to her appearance at the Clinic, the patient had been under treatment for "anemia and dryness of the mouth." Treatment had consisted of "x-rays,

drugs [sialogogues-pilocarpine], and corrective diet," none of which relieved her condition. She acquired the habit of chewing gum constantly to overcome the dryness of her mouth and limited the use of sugar, salt, and other condiments.

Oral Examination

The lips and corners of the mouth were characteristically dry and fissured; the soft tissues of the mouth, principally the mucous membranes of the cheeks, were red, raw, and peeling. The patient reported that in her tongue, which was swollen and raspberry red, there was a sensation of burning characteristic of glossitis.

In the broad, firm upper ridge there was no indication that difficulty would be encountered in the construction of a denture: The lower ridge was well absorbed and flat; the masseter and buccal muscles were well developed.

The prognosis for wearing the full lower denture was questionable; but

it appeared that if the patient were properly instructed, reasonable success could be attained.

Treatment and Response

Full upper and lower acrylic dentures were constructed. Proper and full extensions were made, particularly on the lingual flanges of the lower denture, and special attention was given to the vertical dimension. The cases were mounted and the occlusion ground.

Within a week all symptoms of "dry mouth," with the characteristic glossitis and peeling membranes, disappeared. The patient is quite comfortable and reports a normal flow of saliva. Salt, sugar, and other seasonings are now a normal part of her diet.

The patient was able to adjust herself to the dentures in a shorter period than were inexperienced denture wearers. The restoration of vertical dimension and restimulation of the sublingual and submaxillary glands undoubtedly were responsible for resumption of a normal salivary flow.
30 West Thirty-ninth Street.

Report of a Practical Case of

MOUTH REHABILITATION

GABRIEL WEISS, D.D.S., Philadelphia

DIGEST

In rehabilitating this mouth, replacement of second molars was prevented by enlarged tuberosities, the correction of which through alveolectomy was contraindicated. Vertical dimension could not therefore be restored completely. Onlays in a partial denture increased it one millimeter; but gold cast crowns with acrylic veneers were deemed necessary on the maxillary anterior teeth to replace porcelain jacket crowns, which had been fractured by a deep overbite, and thus to avoid a repetition of the fracturing of the crowns.

A YOUNG woman in her early thirties presented with four fractured porcelain jacket crowns on her maxillary anterior teeth. They had broken on the lingual surface after many years of service and the patient wished to have them replaced. Other teeth had carious defects and needed attention.

A careful diagnostic study included a complete case history, thorough clinical and roentgenographic examinations, and accurate study models.

Existing Dental Conditions

1. Slightly closed vertical dimension due to several missing posterior teeth (second and third molars; left

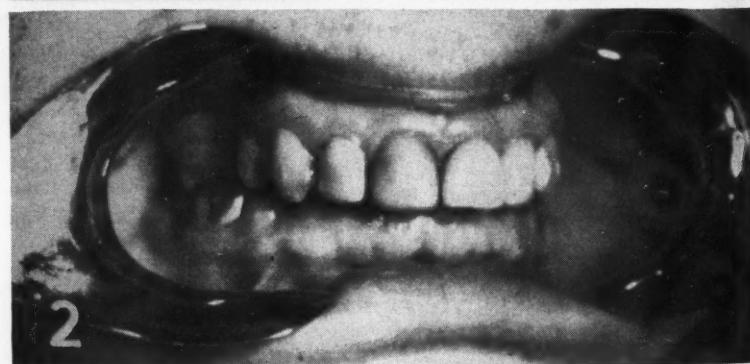
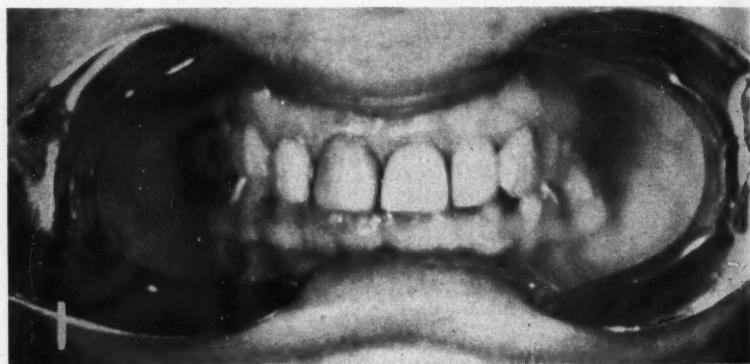
first maxillary molar) which had never been replaced.

2. A deep overbite which caused the fracturing of the lingual surfaces

of the porcelain jacket crowns on the four maxillary incisors (Figs. 1, 2, and 3).

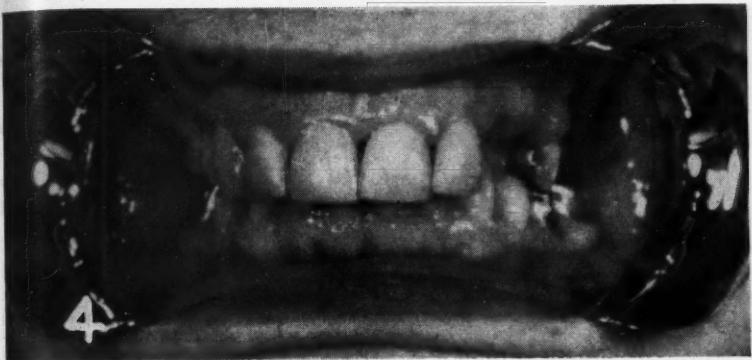
3. Excessive tooth wear.

4. Thickly enlarged tuberosities with deep alveolar extensions of the



1 - 2 - 3.

Patient's occlusion before treatment.



4



5



6

4 - 5 - 6.

Patient's occlusion after treatment without the cast partial denture in place.

maxillary sinuses. These tuberosities actually contacted the crest of the mandibular ridge in centric occlusion.

5. Carious defects:

- Badly broken-down maxillary left cuspid and first bicuspid.
- Distocclusal caries of the maxillary right first molar, with tooth tipped out of occlusion (Fig. 2).
- Defective gold crowns on the mandibular right and left first molars, and the left second bicuspid.

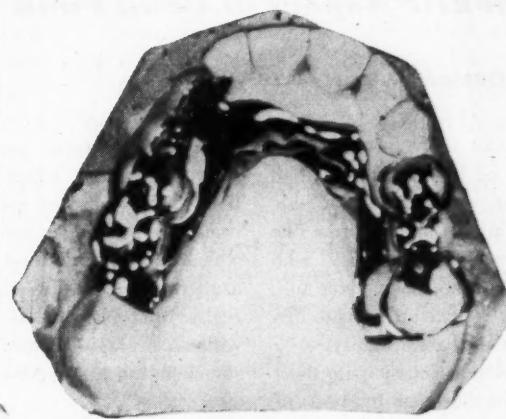
Diagnosis

Consultation with an oral surgeon and rhinologist confirmed the inadvisability of a partial alveolectomy to reduce the size of both tuberosities. The reason for this decision was that such an operation would have removed the floor of both maxillary sinuses, thus creating greater difficulties and possibly causing a severe case of chronic sinusitis.

It was decided, therefore, to rehabilitate the patient's mouth without replacing the second molars.

Method of Treatment

- The three defective gold crowns were replaced by properly fitting gold crowns with cast occlusal surfaces (Figs. 4, 5, and 6).
- The maxillary right first molar was restored and brought into proper occlusion by a cast gold inlay (Fig. 5).
- Due to extensive caries, the maxillary left cuspid and first bicuspid were extracted.
- It was impossible to restore the vertical dimension more than a millimeter without causing the patient's face to assume a grotesque appearance; the four maxillary anterior teeth were therefore restored with cast gold crowns, acrylic veneers being used (Figs. 4, 5, and 6). They were prepared as regular shoulder jacket crowns.
- A carefully planned partial den-



7. *Cast partial denture with onlays.*

Patient's occlusion after treatment had been completed.



ture was cast to replace the four missing maxillary teeth; namely, the right second bicuspid and the left cupid, first bicuspid, and first molar (Fig. 7). Onlays on this partial denture increased the vertical dimension about one millimeter in the anterior region. The occlusion was carefully balanced (Figs. 8, 9, and 10).

Results

1. The patient felt comfortable from the first day that treatment was completed.
2. Because it was possible to reduce the bulbous appearance of the maxillary incisors with the new veneer crowns, her appearance had been greatly improved.
3. Occlusion was balanced and stabilized.
4. Re-examination, several months after treatment had been completed, indicated no adverse changes.

*Medical Arts Building
Sixteenth and Walnut Streets.*

Therapeutic Aspect of Good Food

N. PHILIP NORMAN, M.D., New York

PHYSICIANS ARE more proficient in the detection of biologic decay than they are in the recognition of biologic health. They are, in other words, like the institutional psychiatrist who rarely contacts a normal person and, when he does, at once attempts to distort normality into abnormality.

When physicians emancipate their minds from the therapeutic aspects of pathology; enlarge their etiologic horizon beyond the boundaries of

Pasteurian pastures populated with micro-organisms which they have blamed for most of mankind's miseries; and become concerned with where good or bad food and animals are grown, then they shall begin to realize that Nature has provided us with an ecologic pattern that is self-sufficient for the survival of all species.

Medical and dental therapists should direct their concern toward

the prevention of physiobiologic wreckage which is largely the end result of improper nutrition and improvident living. Man's health depends more upon healthy soils, plants, and animals than upon miracle drugs and "Fountain of Youth" serums. Fertile soils, healthy plants, and healthy animals constitute our most potent therapeutic apparatus for the maintenance of health and the prevention of most diseases afflicting the human organism. This is a fact which most physicians, dentists, and scientists have been tardy to appreciate or recognize.

—From *American Journal of Orthodontics and Oral Surgery* 33:781 (November) 1947.

The EDITOR'S Page

ALTHOUGH EVERY dentist is aware of the close relationship between nutrition and dental disease, the profession is given few opportunities to keep informed of developments in nutritional research. Little or no information on the subject appears in the dental literature. Few programs of dental societies feature the subject. The principle of repetition is well-known and practiced by advertisers. The same principle should be applied by scientists. We must learn to repeat over and over again the fact that dental disease is unfavorably influenced by the *absence* in the diet of the protective foods and by the *presence* in the diet of excessive amounts of refined sugar and devitalized, processed foods.

There should be no subject labeled "dental nutrition." What is good nutrition is equally good for all tissues. What is harmful to the dental tissue is undermining and destructive to other tissues. Any effort, therefore, to teach dentists the facts of nutrition must encompass the whole broad subject. In such a comprehensive treatment, we should be informed of the facts that come from the laboratories and the ones that are substantiated by clinical studies. There is also another aspect of the subject: the negative. This includes a knowledge of the many things that are done to natural foods that make them ineffective and harmful.

A hard-hitting description of the destructive things that are done to natural foods is the book *TOMORROW'S FOOD*¹ by Rorty and Norman. The exposé by these authors will come as a jolt to most of us when we see how much of our everyday food has been devitalized and made nutritionally inert by the tamperings of food handlers. Those of us engaged with "the endless repair mechanics of therapy" will find in this book many possible explanations of our failures in the treatment of disease.

As a fine example of the contribution made in this book, here is a list of things that are done to devitalize the foods that nature gave us:

"To elucidate what has been happening to our food supply, we give a few examples of sophisticated 'new foods,' and of the treatments required to achieve sophistication. (. . . because of advertising-

induced food habituation, we have come to accept, even prefer, some of this processed food to the natural, wholesome food.)

"Polishing rice—which robs the cereal of its antineuritic factor.

"Separating grains into fractions instead of using the whole grain—which gives us bread and cereals of inferior quality.

"Bleaching vegetables—which destroys the chlorophyl and impairs the mineral and vitamin content.

"Sulphur treatment of dried fruits.

"Refined" table sugar—all minerals and vitamins are extracted from sugar cane or beet juice for this product.

"Products made from 'refined' sugar: sweet beverages, confections, and bakery commodities.

"Combining berries and fruits with large quantities of refined sugar in jellies, jams, and preserves.

"Citrus fruits, picked before they are ripe and dyed or subjected to gas treatment to develop color.

"Prepared and pre-cooked breakfast foods and cereals.

"Bolted (literally filtered) flours, chiefly wheat and corn.

"Meats and fish are dried, salted, pickled, smoked and soaked in 'smoke solutions,' or injected ('needled' or 'pumped') with gelatin, fat, brine, chemicals, and 'smoke solutions.' Many of these antics are to disguise stringy meat of malnourished animals. Tough meat is subjected to partial putrefactive decomposition to make it tender.

"Mass production of eggs—which gives us non-fertile eggs, devoid of an essential hormone.

"Commercial egg powder may be processed from 'spotted' eggs—outbreaks of botulism have been traced to such practices.

"Addition of artificial coloring and flavoring to foods gone insipid because of processing.

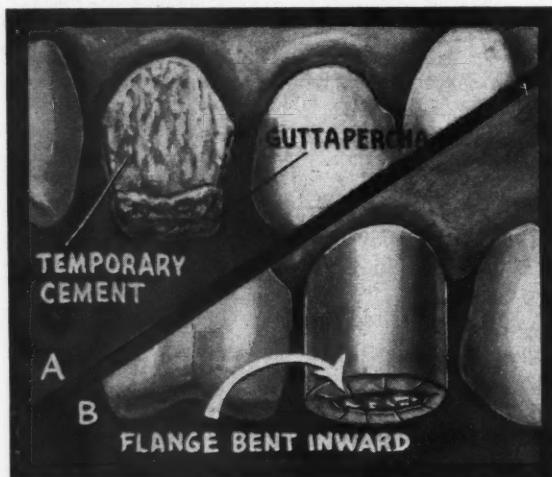
"Many tinned meats contain sugar, sodium nitrite and sodium nitrate. These two drugs are added to facilitate a uniform diffusion of salt and sugar through the product. It will take years to find out the cumulative effects of these drugs on our health.

"Homogenized milk! Can this be an oversight on the part of Divine Providence—did He forget to place an egg-beater in the cow's udder?"

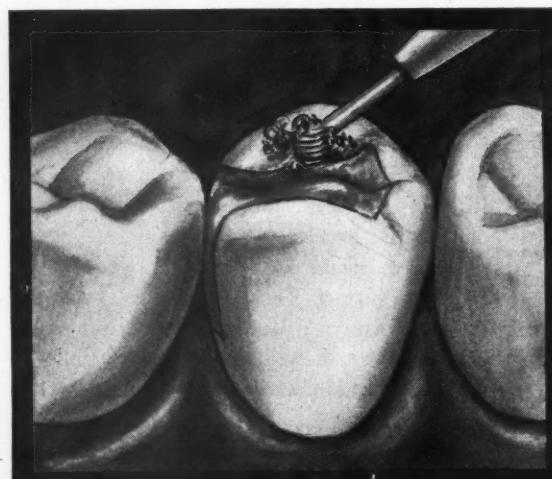
¹Rorty, James, and Norman, N. Philip: *Tomorrow's Food*, New York, Prentice-Hall, Inc., 1947.



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2



3

Clinical and Laboratory

Cleaning Amalgam Carriers

F. J. Loughlin, D.D.S., Jamaica, New York

1. When amalgam has set inside the barrel of an amalgam carrier, it may be removed by moving the barrel portion of the carrier back and forth over the Bunsen flame. The heat will soften the amalgam, and it may then be removed by pushing the plunger.

Protecting a Full Crown Preparation

F. Engel, I.D.S., Bournemouth, England

2. After a tooth has been prepared for a full crown, there is a tendency for the tooth to elongate. To prevent this elongation, fit a copper band to the preparation with a slight overlapping in the occlusal. Cut and fashion this projecting part into a flange. Fill the band with temporary cement except for the occlusal portion; pack this with gutta percha. Occlusal stress on this temporary restoration prevents the tooth from elongating and assures a comfortable tooth.

Direct Inlay Waxing Technique

Warren E. Gerber, D.D.S., Charleston, West Virginia

3. A large round bur, number 8 or 10, may be used effectively as a wax-carving instrument in the direct inlay technique. This method is particularly effective in cases where the wax pattern is easily dislodged.

READERS are Urged to Collect \$10.00

For every practical clinical or laboratory suggestion that is usable, DENTAL DIGEST will pay \$10.00 on publication.

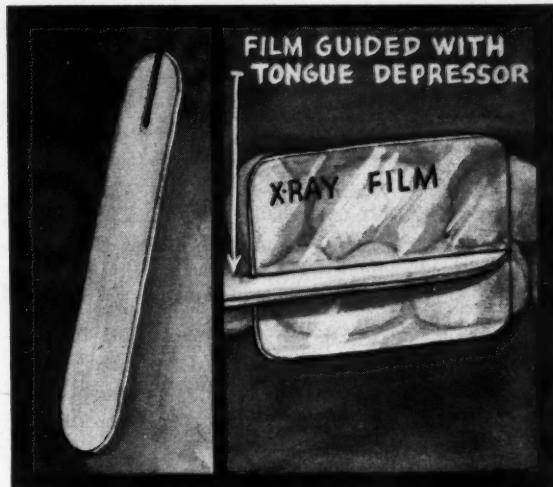
You do not have to write an article. Furnish us with rough drawings or sketches, from which we will make

SUGGESTIONS . . .

A Bitewing Film

R. J. Bamash, D.D.S., Philadelphia

4. In case the operator wishes to take a bitewing roentgenogram and no bitewing film is available, he can utilize an ordinary film by the following method: A slit is made in a wooden tongue depressor. The slit is the size of a film. The film is placed in position and the patient bites on the stick. The protruding wooden tongue depressor handle is an aid in establishing angulation.

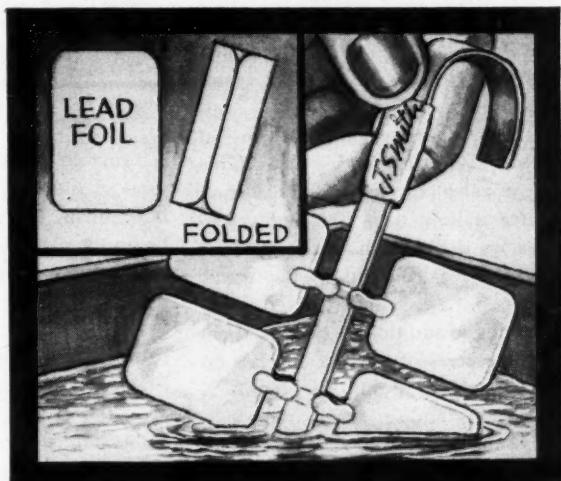


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Identifying Roentgenograms in the Processing Solution

Jean Mannon, D.A., Tulsa, Oklahoma

5. Use a piece of lead foil from the x-ray film packing. Fold the lead around the neck of the film rack, and print the patient's name on the lead foil. There is no danger of fading or removal of the patient's name while the holder is in the processing solutions. The lead foil is removed and discarded after the films are mounted.



5

Matrix Band Technique

Joseph L. Capizzi, D.D.S., Milwaukee

6. Select a band the desired length and width. Find the center of the band and make a twist so that one half of the band overlaps the other half. When placed in the matrix holder, the band thus formed is narrower at the gingival portion than at the occlusal portion. This does away with the necessity of preparing the band by cutting it with a scissors.



6

suitable illustrations; write a brief description of the technique involved; and jot down the advantages of the technique. This shouldn't take ten minutes of your time.

Turn to page 128 for a convenient form to use.

Send your ideas to: Clinical and Laboratory Suggestions Editor, DENTAL DIGEST, 708 Church Street, Evanston, Illinois.



Dietary Treatment of Hypertension

Hypertension is receiving more consideration today because of the prevalence of the disorder and new findings from numerous sources. It has been noted that specific diets are of value in the care of patients with diastolic hypertension. This is especially true in patients with impairment of renal function whether this is due to glomerulonephritis or essential hypertension. Dietary treatment is also being used to advantage in patients without renal impairment.

There are two dietary regimens of value. The rice diet consists of rice, fruit, and sugar. No salt is allowed in the diet. Basically the diet contains 2000 calories with 5 grams of fat, 20 grams of protein derived from rice and fruits, 468 grams of carbohydrates, and not more than 0.2 grams of sodium daily.

Patients are usually able to eat 200 to 300 grams of rice a day. This is equivalent to about 1050 calories. Water is limited to 1000 cubic centimeters per day; however, there is a great deal of fluid in the fruits. Sugar and fresh or preserved fruits provide the additional calories. Much of the success of the diet depends on the palatability of the rice. Therefore, its cooking and serving is important. Often the addition of sugar or lemon juice improves the taste. Even though the protein in this diet is below the standard nutritional daily requirement, good results have been obtained and the patients have been found to be in nitrogen balance.

Another diet used with success is the low sodium diet of Grollman. This diet is more varied and supplies a larger amount of protein than the rice diet. Adequate protein and a sodium intake of 0.5 gram a day is accomplished by using milk dialyzed free of sodium.

These diets are quite difficult to follow when the patient leaves the hospital supervision. Yet they can lower the blood pressure and lead to relief of many of the unpleasant symptoms of hypertension. Patients should be watched carefully to make

MEDICINE

and the Biologic Sciences



certain that they do not develop symptoms of sodium deprivation, particularly during hot weather. One should be on the alert for signs of anorexia, weakness, and impaired mental acuity.

Bridges, W. C., and White, P. D.: The Treatment of Diastolic Hypertension, M. Clin. North America 31:1106-1120 (September) 1947.



Sulfonamides— Local Application

The Council on Pharmacy and Chemistry of the American Medical Association voted to delete the discussion on the local use of sulfonamides from the 1947 edition of N.N.R. The following statement replaces the deleted discussion: "Experience gained in World War II seems to indicate that the use of crystalline sulfonamides as topical agents was not very successful in the management of wound infections or in the treatment of infections of the skin or mucous membrane. The routine use of sulfonamides as topical appli-

cations in wounds, burns, and in superficial infections is therefore to be discouraged."

Evidence has accumulated that the use of these drugs in the forms of ointments, lotions, powders, and other preparations suitable for local application resulted in the sensitization to these drugs in a large number of those treated. Local applications of these drugs should be limited to the relatively few cutaneous infections known to respond to this form of therapy. Such medication should be carefully supervised.

It was determined from the vast experience arising from the war that these drugs delayed healing and were otherwise definitely deleterious. And it was noted that they were ineffective for the purpose for which they were used, wound sterilization.

Dermatologists have concluded that systemic therapy, preferably with an antibiotic such as penicillin or local therapy with antibacterial agents less prone to produce sensitivity, will effectively control most cutaneous infections formerly treated with sulfonamides. Such therapy is in general more effective and far less hazardous to the patient.

In conjunction with the action of the Council is the resolution adopted by the Section of Dermatology and Syphilology of the American Medical Association condemning the indiscriminate local use of sulfonamides in diseases in which other ordinarily less harmful remedies are equally effective. A similar resolution has been adopted by the American Dermatological Association.

There is no evidence of the value of sulfonamides in such preparations as hair tonics to control dandruff and promote growth of hair, in shave creams to prevent infections, and in other inconsequential preparations.

Not only do they have no value but their use may be dangerous for three reasons: (1) An ineffective remedy is substituted for one which might be of value; (2) there is a strong possibility of permitting the development of sulfonamide-resistant organisms; (3) a cutaneous sensitization may develop which prevents the use of sulfonamides in serious

conditions for which these drugs are known to be effective.

Council on Pharmacy and Chemistry: Sulfonamides for Local Application Deleted from N.N.R., J.A.M.A. 135: 157-158 (September 20) 1947.



Surgery For The Aged

The dental surgeon should have a good understanding of the problems associated with surgery for the aged patient. The aged patient has a diminished vitality, a sluggish intracellular metabolism, and a narrow margin of safety. There is little or no reserve in old age to combat the depressing effects of shock, hemorrhage, dehydration, infection, or anesthesia. Death may follow the most trivial operative procedure.

It is wise to hospitalize many of the aged patients. This allows them to become accustomed to their environment and to effect the greatest rehabilitation. Special measures are taken to avoid shock and hemorrhage. These include steps to combat dehydration and improve nutrition. Exhaustion, sleeplessness, or anemia are sufficient to cause death in the aged when they are subjected to anesthesia and operations.

Fluid intake preoperatively should be at least 3000 cubic centimeters daily. If this is not obtained by mouth in foods and fluids, glucose solution may be given intravenously. The purpose of this is to build up the glycogen reserve in the liver, to stimulate kidney function, and to supplement the patient's nutrition. Blood transfusions are often recommended in the presence of anemia.

General depressant anesthetics—ether, avertin, and chloroform—should be avoided if possible. The ideal anesthesia is local or regional anesthesia. Spinal anesthesia may be used if sufficient amounts of blood and fluid are administered. Operations should be performed as quickly as possible and every care should be taken to avoid shock.

Postoperative care includes careful observation to determine the presence

of pneumonia. Today this is treated prophylactically by the administration of sulfonamides and antibiotics.

Morphine may be dangerous in the aged and its dosage should be limited to $\frac{1}{8}$ grain unless the patient has a high metabolic rate or an unusual tolerance for the drug. Codeine will usually control the restlessness and pain of aged patients. George Crile, Sr., stated, "Old age is its own analgesic."

Fluid intake and output should be noted as the kidney function of older people is poor. Nitrogen retention may occur if there is kidney damage. Therefore at least 3000 cubic centimeters of fluids should be taken daily.

Administration of oxygen by nasal catheter to ensure high concentration may be of value in patients with cerebral arteriosclerosis. The barbiturates should seldom be used in elderly patients because of their tendency to cause confusion and deliriousness.

Crile, Jr., George, and Shively, Jr., F. L.: The Hospital Care of the Surgical Patient, Springfield, Illinois, Charles C Thomas, 1943, pages 65-67.



Rheumatic Fever—Predisposing Factors

There is no specific diagnostic test for rheumatic fever; therefore, the actual incidence in the United States is unknown. In children between the ages of ten and fourteen the disease is said to be the most common cause of death.

No virus has been demonstrated and no one has been able to transmit the disease to animals. The only thing which seems definitely established is that the group A beta hemolytic streptococcus is an important, if not the most important, factor in the etiology.

Observers have established the fact that there are some definite predisposing factors. In considering climate the disease is found chiefly in temperate zones.

In the United States the peak of

incidence occurs in January and February on the West Coast and March and April on the East Coast. However, this varies according to other factors, especially crowded living conditions, humidity of the particular season, and the presence of other epidemics like scarlet fever.

The attack rate is lower in Negroes. In children under 3 years of age the disease is rare. The greatest incidence occurs between the ages of 5 and 15 years. First attacks are most common between the ages of 6 and 8 years.

Socioeconomic factors seem to have some bearing on the incidence. The disease is relatively uncommon among children from wealthy or middle class homes. It is essentially an urban disease. Probably infection and crowding together of susceptible individuals rather than deficient diet explain this relationship.

Most evidence shows that children from rheumatic parents contract the disease more readily than do children born of non-rheumatic parents.

Rheumatic fever is a severe disease and every effort should be made to verify it when it is suspected. The results obtained from laboratory findings are nonspecific in character. They are helpful and should be used as aids in diagnosis.

Moore, Clyde: Clinical Aspects of Rheumatic Fever, Nebraska M. J. 32: 225-227 (June) 1947.



Sinusitis—General Considerations

During the past decade the concept of nasal accessory sinus disease has been changed because of two significant factors. There is a better understanding of nasal and sinus physiology, and the use of chemotherapeutic and antibiotic agents has reduced the necessity for radical treatment.

No longer is surgery the first recourse in sinusitis with a resultant distortion of both the structure and function of the nose and sinuses. An effort is being made to establish normal function rather than to destroy the existing structures.

By resisting disease the sinus membrane becomes thickened. When the exciting factors are removed, the membrane returns to normal.

The main function of the nose and paranasal sinuses as a part of the respiratory system is to aid proper ventilation by warming and filtering air. Most of the respired air enters the sinuses during expiration. The mucous secreted by the membranes of the nose and sinuses keeps the upper respiratory passage moist and prevents drying. The sinus membrane is covered at all times with a mucous blanket which carries off bacteria and debris.

In all the sinuses the direction of the flow and stream is toward the ostium. Ciliary action is inhibited, if not stopped completely, by dryness. Moisture is a vital part of normal sinus physiology.

Nasal discharge suggests sinusitis. In the bacterial type a thick purulent drainage is present. A thin watery discharge usually accompanies the allergic type of sinusitis.

A postnasal discharge does not necessarily mean sinus disease, as this may arise from a number of conditions in the nose and sinuses. Overeating, improper atmospheric ventilation, and excessive smoking and drinking often contribute to postnasal discharge.

The incidence of allergic factors producing sinusitis either singly or complicated by infection is high. The common complaint is a continuous nasal discharge. Nasal discomfort persists throughout the year and almost invariably is accompanied by nasal blockage. A history of other allergic manifestations can frequently be elicited.

Treatment consists in regulating the life in accordance with the allergic factors present. Local shrinking agents are of little value and patients are not benefited but often made worse by surgery.

Bacterial invasion of the membranes is frequently seen after upper respiratory infections. Swimming, diving, and dental abscesses may cause bacterial sinusitis. Many of these infections have a marked nasal blockage accompanied by discharge

and pain. As the disease progresses the purulent discharge becomes profuse, thick, and tenacious. Pain may disappear to be replaced by a dull ache over the involved sinus. Fever, malaise, leucocytes, and headache are usually a part of the general systemic reaction.

Treatment of uncomplicated sinusitis in the early stages consists of bed rest, nasal shrinkage and supportive therapy consisting of local heat, analgesics, and sedatives. Sulfonamides and penicillin have a definite place in the plan of treatment. Their use in the early stages prevents the appearance of complications which might otherwise arise.

Surgery is to be considered when pathologic changes have progressed to a degree at which they are considered irreversible. Even then surgery should be conservative. Marked improvement is noted in cases involving permanent injury of the membrane or bone.

Putney, F. Johnson: Nasal Accessory Sinus Disease, M. Clin. North America 31:1344-1355 (November) 1947.



Transfusion Reactions

When transfusion is contemplated there are four types of reactions that may occur. They are pyrogenic, allergic, hemolytic, and "over-loading." They may occur alone or in combinations.

A pyrogenic reaction is usually due to introduction of extrinsic pyrogens into the patient's blood stream by means of improperly cleansed equipment or contaminated water. The causative agent is not definitely known; however, it seems to be a waterborne bacterial product which is not inactivated by heat during sterilization.

The reaction caused by pyrogens may be mild and cause no complaint or it may be severe and cause a shaking chill followed by a high fever.

The best form of treatment is prevention. This may be accomplished by using pyrogen-free solutions and equipment. Some manufacturers spe-

cialize in this type of equipment. If equipment is to be used after the initial use, it must be thoroughly cleansed and rinsed with pyrogen-free water.

Slow transfusion resulting in little change in blood volume reduces the possibility of releasing intrinsic pyrogens. Intrinsic pyrogens are sometimes noted in the presence of extensive infection, malignancy, or thrombosis.

Mild reactions are treated with acetylsalicylic acid and heat during the chill and tepid sponging after the chill. Severe reactions require heroic measures, such as chilling with ice and the use of the electric fan on a wet blanket over the patient to promote heat reduction.

Allergic reactions are manifested by urticarial phenomena. If their extent is severe, the patient may experience serious results.

It is not always possible to prevent allergic reactions; however, some precautions can be taken. If the patient gives a history of allergy, it is wise to consider measures to prevent allergic reactions. Fifty milligrams of benadryl four times a day for one or two days preceding the administration of blood is often advisable. Many potential reactions can be eliminated by using blood from a fasting donor. Injection of a 1:1000 solution of epinephrine is usually beneficial in combating an allergic reaction of minor or moderate degree.

The hemolytic reaction, which carries a mortality rate of 50 per cent, is the most important to be considered. It results from the introduction of (1) incompatible blood cells into the recipient's circulation with their consequent hemolysis; (2) high-titer heterologous serum from a group O donor and consequent hemolysis of the recipient's own cells, or (3) free hemoglobin from old hemolyzed blood.

Checks and double checks should be made to eliminate all technical and human errors which might allow a patient to receive the wrong blood. Transfusion should be halted as soon as symptoms of hemolytic reaction appear. After 50-75 cubic centimeters of blood have been introduced the pa-

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riod. The remaining chapters are devoted to individual biographies of some sixteen of the more important figures in the early history of our country.

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(See pages 122 and 123)

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Sketch: _____

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tient will complain of pain in the lumbar region, dyspnea, and anxiety. If hemolysis occurs shock or death often ensues. Little if any treatment is of benefit.

Cardiovascular failure is due to the failure of the right side of the heart and usually occurs in the aged as a result of too rapid administration of the blood and fluids (over-loading). Symptoms are dyspnea, cyanosis, and moist rales in the lungs. The volume of circulating blood should be reduced by the application of tourniquets to all four extremities. These should be released intermittently to provide some circulation until the circulatory embarrassment has passed.

Hargraves, M. M.: *Transfusion Reactions and Their Treatment*, *M. Clin. North America* 31:803-805 (July) 1947.



Behavior—Etiology

Behavior, either normal or abnormal, is usually dependent on one or more factors. These include heredity, the organic nervous system, and emotional patterns.

All individual structural differences in living organisms are largely determined by heredity. Such individual variations occur in the nervous system tissue as well as in other structures more apparent to the eye. The laws of heredity have been well established by study and experiment. Thus, it seems probable that heredity is the chief determining factor in the traits, physical structure, intelligence, energy, and temperament. The summation of these goes to make the ego or personality.

The inherited structural differences in the nervous system have considerable influence upon intelligence, energy, temperament, and emotional stability. The variation is great in different individuals and families.

Most psychiatrists maintain that only persons whose nervous systems are constitutionally hyperirritable can be influenced by environmental factors to the extent of developing psychoneuroses. Nothing can be done

to improve the heredity of a patient; therefore, everything should be done to improve his environment and learned behavior.

Other major causes of behavior disorders are organic nervous system changes and chemical reactions. Nutritional disorders such as vitamin B deficiencies, pellagra, anemia, low blood sugar, and low blood chlorides may be factors. Endocrine disorders, as those noted in menopause and thyroid disease, also may be factors. Drug toxemia as from ether, alcohol, barbiturates, and opiates is frequently a cause. Infection toxemia from pneumonia, typhoid fever, and other diseases can cause disturbances. Brain inflammation, brain injuries, and brain circulatory changes are factors causing disorders.

There is no question that abnormal emotional reactions are frequently the cause of abnormal behavior in both the voluntary and involuntary systems. Emotions are the organic expressions of the inherited instincts. Emotions may be of short duration, such as fear, anger, or joy. They may be of longer duration, such as anxiety, worry, depression, resentment, disappointment, ugliness, or happiness. Those of longer duration are termed moods or temperaments.

The reactions of different persons to the same environment or circumstances are dependent upon their inherited variations and upon their various past experiences. Every wish or psychic tendency seeks an adequate bodily expression. If this external expression of a psychic desire is blocked, the stimulus is directed into the wrong nerve tract and hence the emotion or desire finds its expression in some other part of the body. Such reactions account for numerous unexplained disturbances and serve to emphasize the need for careful examination and accurate observation.

Lockwood, B. C.: *Psychiatry and Psychosomatic Medicine Viewed by an Internist*, J. Michigan M. Soc. 46: 1183-1188 (October) 1947.

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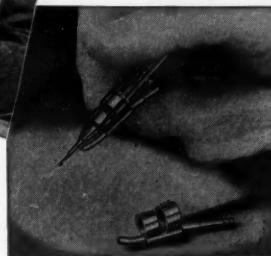
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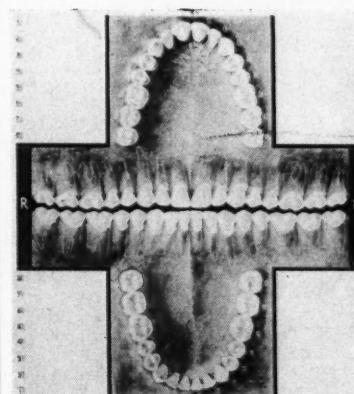


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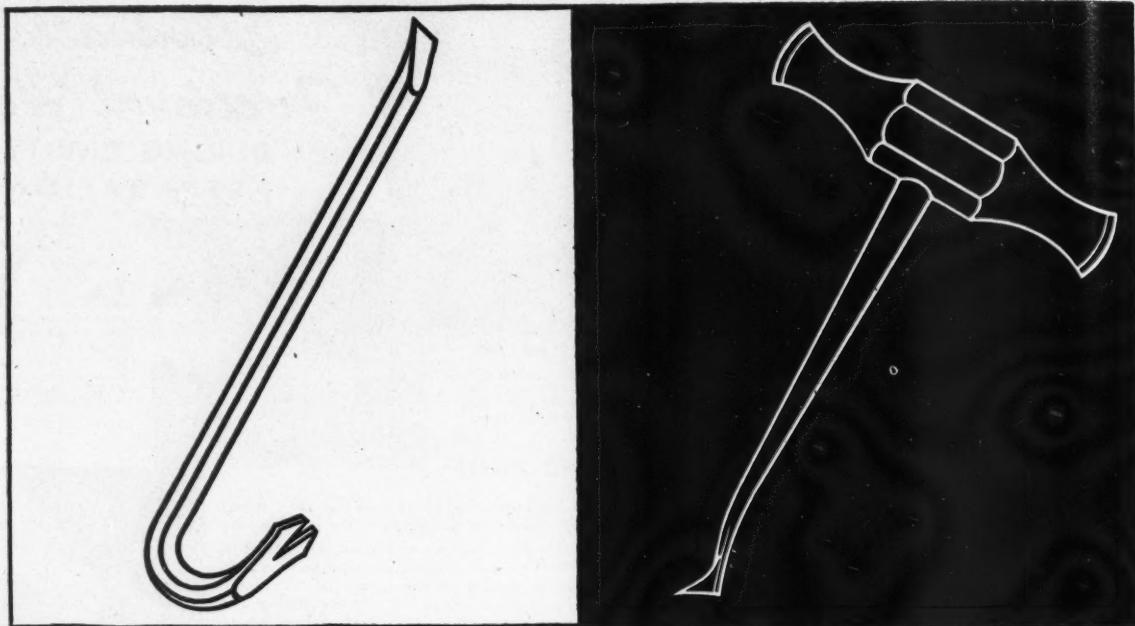
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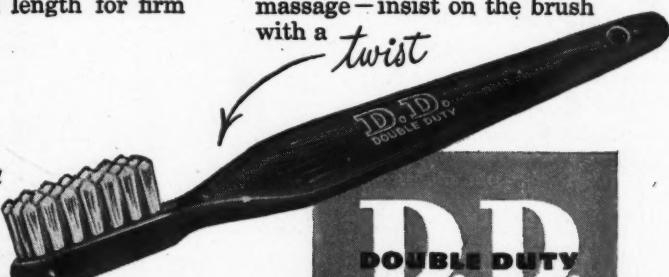
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Pain Is the Great Leveler

One of my favorite newspaper columnists, Sydney J. Harris of the *Chicago Daily News*, recently wrote a piece about the regression that comes to anybody suffering from a toothache. In a style that is inimitably his own, this is the way Harris puts it:

"It's a good and humbling thought to remember that this mighty edifice called Man, this maker of empires and symphonies, this Titan of the universe, can be brought low by a little nerve-end in his tooth; that the slightest pressure in a tiny sensitive area of the brain can reduce him from genius to gibbering idiot; that an obscure gland, if it secretes a drop too little, can frustrate his noblest intentions.

"I started out yesterday to write a humorous piece about skiing. But humor can't compete with a throbbing nerve. The subtle alchemy of pain transformed my whole temperament, made me aware (as we are never aware when we are well) of man's innate frailty. You can get more philosophy from a toothache than you can from many a sermon.

"Huxley's famous essay on a piece of chalk could be duplicated (by somebody who had Huxley's talent) by an essay on the implications of a toothache. C. S. Lewis almost did it in his fine book, *The Problem of Pain*, but it was a little above the layman's head.

"It is no accident that many of the finest works of art have been created by men suffering from some deep-seated pain or handicap. Good health makes us content to be animals; illness makes us conscious of mortality. No man who is satisfied, with himself or with the world, can ever create anything of enduring worth.

"Keats' realization that the only

lasting joy is a thing of beauty came as much from his tuberculosis as from his poetic imagination. A healthy, adjusted Keats would have turned out poetry like that of Wordsworth and Longfellow. Nature balances the books in everything—even a toothache."

Possibly I like this column of Sydney's so well because I have seen many tycoons and people with inflated conceit humbled and penitent in the dental chair. We all know the blustery, hard-bitten super he-man

who becomes a quivering mass of jelly in the dental chair. Gone is his bluster. In its place is the faltering voice, the cold sweat on the brow, the anxious face, the trembling hands. These people are not cowards any more than the rest of us are cowards—which we all are on occasion. Under pain and anxiety these people have regressed to an infantile behavior level, just as we all do. There are no exceptions.

Anxiety is one price that man pays to be man. Animals are not anxious

(Continued on page 134)

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for the now well-established theory of artificial tooth selection by age groups in 1938 and 1939.

In those years new concepts and facilities for greater naturalness in artificial teeth were given to the profession with the introduction of the then revolutionary transparent enamel. This transparent enamel, which superseded the old translucent or semi-opaque type, provided the opportunity of obtaining new and hitherto undreamed-of optical effects and life-like simulations of natural teeth. This new enamel however, which was developed and introduced by Dr. Simon Myerson in his True-Blend tooth, was only a beginning.

True, the new tooth, with its ten shades and forty seven upper moulds DID meet the mould and shade requirements of most denture patients but there was as yet *no effective system for selection of teeth which duplicated the usual age conditioning of natural teeth.*

Limitations of Shade and Mould

While it is an indisputable fact that teeth tend to darken with age yet it is also a fact that the range of shades in any age is quite broad—some being extremely light but many being yellow and dark. We have observed people of over 40 with lighter teeth than people under 25. Therefore, while it is possible to set up age-group classifications with respect to shade in a broad sense, this is by no means true with respect to mould and in either case is an over-simplification of the problem.

One of the most dependable facts of life is that age affects every part of our anatomies in a fairly constant manner and it does not fail to leave its tracings on our teeth. Incisal edges wear and become irregular; labial enamel checks and becomes stained; surface erosions appear. The simu-



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lation of these characteristics caused by time and use are indispensable requirements for true age group selection. Accordingly, Dr. Myerson developed in 1939, Modern-Blend, a tooth less marked with erosions and stains than True-Blend; and again in 1940 introduced Characterized which, in addition to the erosions and stains carried remarkably fine simulations of synthetic fillings, thereby giving to

these teeth the added ruggedness desirable for many patients.

The Meaning of True Esthetics

The conscientious practitioner seeks to produce in his restorations the closest possible harmony with the facial characteristics of his patient. In a word, it is his aim to construct dentures esthetically so perfect that

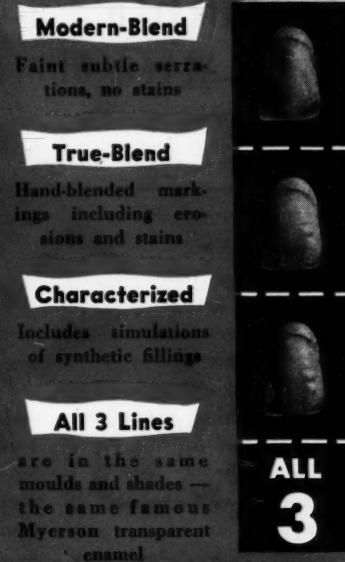
ade are NOT ENOUGH . . .

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Study these three faces. Obviously, different Labial Characteristics are necessary for each . . . yet they require the same mould and shade.

The simple, scientific Myerson System enables you to select a mould and shade for your patient and have that mould and shade in any one of three lines *individualized* according to your patient's requirements.

This facility exists in no other line of artificial teeth.



they defy detection when viewed at close range and at any angle. Often however, he is faced with a patient whose views do not correspond with his. For example, we recently had in substance the following information from Dr. of Boston:

"I like Characterized and like to use one or two of them in practically every case and most of my patients appreciate them. Nevertheless, a num-

ber have objected and I have developed a regular procedure which has proved successful in creating a desire for anterior characterization. I make a trial plate with True-Blend and True-Kusp posteriors with no Characterized. When I have set these up I have the patient look at them and I suggest, 'possibly you will like this denture better if we remove this lateral and put in another with a simu-

lated filling in it.' Almost always my patient is pleased with this and I then suggest and introduce a second and perhaps a third."

A Simple, Sensible Method

The above technique can be adapted to any type of patient depending on age, complexion characteristics and condition of the previous natural dentition. The facilities for this method have been made available by the development of three distinct lines of teeth i. e. Modern-Blend, True-Blend & Characterized. All three are produced in identical moulds, shades, numbering systems and even mountings but with different labial characteristics. At long last a simple and most efficient system for age group selection had been achieved. Having selected the proper mould and shade the dentist can now have a multiple choice of teeth with different age characteristics on each. Thus an entirely new facility for duplicating the patient's natural teeth or for harmonizing a denture with facial characteristics has been placed in his hands.

This multiple choice system uses but one mould guide and shade guide for three lines of teeth. No matter what age or sex the patient may be, whether the teeth be plain or rugged through erosions or markings of time, he can select the proper teeth to meet the need with the aid of Dr. Myerson's latest contributions.

Finally, this system is based on plain and simple facts and not debatable theories. No law of genetics associates head shape with tooth shape, nor is it possible to tell from which relative a person may inherit his characteristics. Age identifies us all!

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AFTER PROPHYLAXIS....

Considerable discomfort inevitably attends a thorough scaling of the teeth.

A cotton roll saturated in Lavoris and laid along the gum margins for a few minutes following this operation will relieve soreness, help control minor hemorrhage and tone and constringe the tissues.



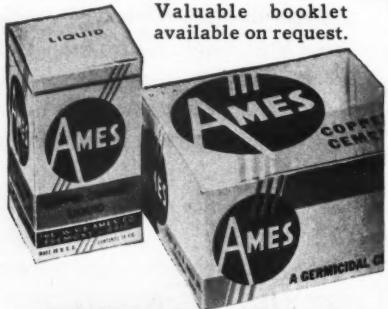
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(Continued from page 131)

about their health and their job, the place where they live, what their neighbors may think about them. When we see a patient who is under a cloud of apprehension, we have no reason to be anything but understanding: There, but for the grace of God, might we be.

This outpouring on the subject of anxiety is written out of my own recent experience. Bedded down with the flu—grippe—virus X or whatever the current name of the malady, I enjoyed my warmth, the chance to read, and the luxury of being waited on. This very pleasure of wallowing in animal comforts and attention is a sign, I fear, of our universal infantilism. But one night when the neighbors' radios were quiet and their snoring had begun, I did a fine job of anxiety-expressing. I was positive that I had pneumonia; I knew beyond doubt that I had tuberculosis; the ringing in my ears could be nothing but a mastoid infection; the pain in my gut was undulant fever that I contracted years ago in my

youth while visiting on some relative's farm. I could almost remember the day when I milked the Jersey cow and drank the warm milk out of a tin can that wasn't too clean.

Fortunately, my physician is an understanding friend. When I catalogued my ailments to him (which I did with the bravado of daylight), he dutifully made his examinations and assured me that what I needed as much as anything was to get the hell out of my warm bed in a few days and get back to work. I like him for many things, the least not being the story that he told on himself. He described the sudden choking and air hunger that he developed one night. He crawled on his hands and knees to the bathroom. He knew that his end had come. Morning brought recovery. He had had no previous attack and has had none since. But here may be a clue: The day before this episode, he had taken his physical examination for the Naval Medical Corps—and passed.

Only by suffering in little or big doses can we hope to understand

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Second, the styling of the package—its color . . . design, too. What was a two-unit cream-and-blue setup box is now a functionally superior one-unit, folding-type box . . . yellow with black printing, and the trade-mark "Kodak" in red.

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In your ORAL HYGIENE this month



Doctor Jerome Hugh Crossett explains his formula for building a back-log toward retirement. He says: "I have seen good times and bad times, but the plan that I have followed has been a success regardless of economic conditions. I may never want to retire, but my plan is directed toward a goal that will enable me to do so at 55." It's a plan worth investigating.

★ ★ ★

And here is a dentist who *did* retire at 55! If you have any doubt about retirement being worth working for, read Doctor Harry F. Gilman's article, "I Enjoy Retirement." Doctor Gilman is having a lot of fun fishing, golfing, making furniture, taking part in community life, and sometimes skiing and skating! To dentists who claim they'd be lost without their dental practice, he says "Drivel."

★ ★ ★

"The Case for Pulp Testing"—Doctor Robert W. Fischer explains how every dentist may be saved the embarrassment of mistaken diagnoses with proper and timely use of pulp tests. He also explains proper procedure.

★ ★ ★

"A Little More Art, Please!," urges Doctor James E. Callaway as he explains that individualizing dentures

is well worth the extra effort and is not unduly time-consuming. There's a lot of satisfaction (for both patient and dentist) when art, as well as skill, is embodied in the denture.

★ ★ ★

"Today's Technician May be Tomorrow's Dentist," warns Doctor S. Joseph Bregstein as he outlines some of the dentist-laboratory relationships which are not in accord with the high standards of the dental profession. "Use the laboratory technician as an expert craftsman to carry out your prescription. Consult only with authorities of accredited qualifications for the specific situation which may present," he advises.

★ ★ ★

Whose fault is it that dentists are not well-distributed over the whole country? Doctor Peter J. Warren denies that the profession itself is to blame, and suggests that some form of subsidized educational program might insure rural communities the dental service they now lack.

★ ★ ★

Are you responsible for your employees' mistakes? "Yes," says the law in almost every case. Renzo Dee Bowers, LL.B. explains some interesting dental damage suits in his article, "Suing Dentists for Negligent Acts of Employees."

the pains and fears of the other fellow. The dentist or physician who never has had a pain himself is ill-prepared to comprehend the pain of others.

"End-gaining" vs. the "Means-whereby"

I am always petrified when I run into philosophical expressions such as these. Philosophers, with their involved and tangled syntax, are confusing to me. I have known three professional philosophers in the flesh. They were normal enough fellows and quite lacking in involved expressions outside their writing. They were always understandable to me when practicing their craft over the barroom table but utterly meaningless when postulating (this, by the way, is one of their favorite words) in print.

A British Shakespearean elocutionist, Mr. F. Matthias Alexander, who experienced difficulty with his speech, gave up his profession to search for the causes of his difficulty. Among other things Mr. Alexander found was that he was "using himself improperly." He found that he was acting instinctively to many situations rather than properly and rationally. When he learned to think before he acted, he found that he was able to conserve his energies and perform much better. There is no doubt that Mr. Alexander has done an important amount of self-examination and has made some valuable discoveries. Despite his turgid style of expression, if one works hard enough at the reading, it is possible to uncover helpful suggestions from his writings.

Mr. Alexander has the descriptive word "end-gainer" for the person who unwisely believes that the end justifies the means. Whether he is a golfer, an adagio dancer, or a dentist, Mr. Alexander believes that the "end-gainer" is always in hot water because he too frequently disregards the steps in the processes that lead to the end result. All the procedures that are involved in any process, mental or physical, Mr. Alexander calls "means-whereby." If the golfer is an "end-gainer," he decides that he wants to shoot in the low-eighties. If he doesn't give careful consider-

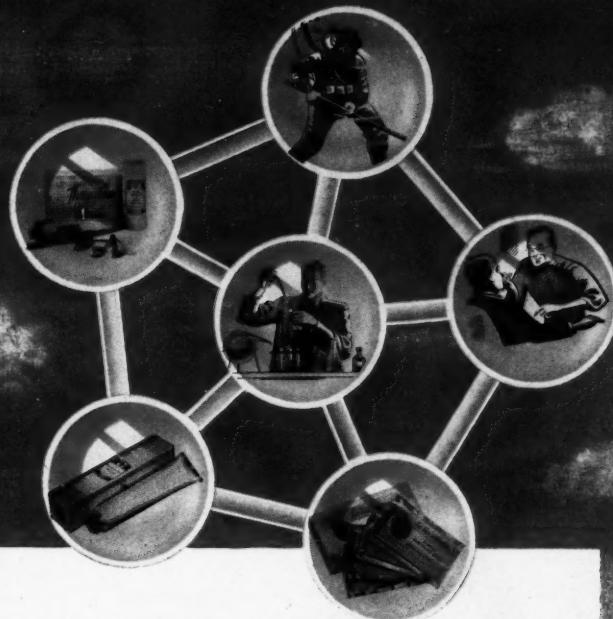
ation to the "means-whereby," which means perfecting every step in his game in proper sequence, he will never fulfill his ambition.

In the case of applying Mr. Alexander's teachings to the practice of dentistry, I am reminded of all the wasted time and energy that goes into the creation of such a comparatively simple thing as a gold inlay. The "end-gainer" sees a cavity in a tooth. In the cavity he pictures a gold inlay—the end. Without regard for efficiency, the conservation of his eyesight, or physical energy, the dentist proceeds with the operation in the hardest possible way. If the dentist understood the meaning of the "means-whereby" he would analyze in advance of action every step in the procedure. He would execute every detail with regard to the "proper use of the self" which means he would perform every procedure not by instinctive, time-accepted action but by careful thought to determine whether this was the best way. The "best" means best for the physiology of both the patient and the dentist.

In operative procedures, we so often do everything the hard way. The position of the patient in the chair may be bad for him and for us. We stand when we might sit. Our instruments are not selected in advance but chosen helter-skelter as we proceed. We have made no effort to plan the "means-whereby" but have concentrated our efforts on "end-gaining."

When we review our everyday activities, whether they be shaving in the morning, getting a car out of the garage, attacking a meal, we uncover many of our actions that are purposeless and inefficient. We have acquired many instinctive reflex activities that disregard efficiency and produce tensions and fatigue. "The proper use of the self," according to the teachings of Mr. Alexander, means self-analysis, self-discipline, self-control. These are good habits for all of us to develop whether we are philosophers or just ordinary guys.—E.J.R.

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Etiologic Factors in Inflammation of the Parotid Gland

A. C. FURSTENBURG, M.D.
Ann Arbor, Michigan

Dehydration

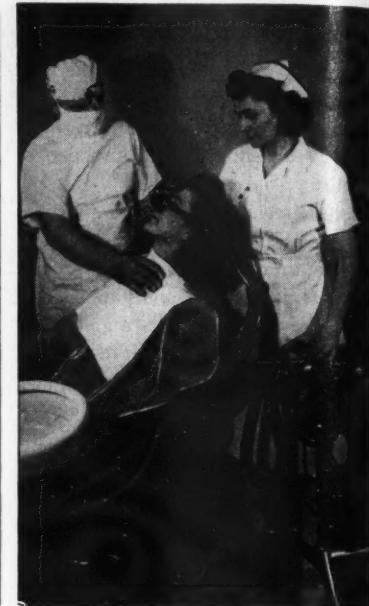
SIR WILLIAM OSLER in 1892 called attention to the occurrence of inflammation of the parotid gland "in connection with injury or disease of the abdomen and pelvis." No explanation was offered; but in the light of recent studies on water balance, it is highly probable that the etiologic influence was dehydration.

I have never seen a parotid abscess develop in a patient whose fluid requirements were adequately fulfilled. The dry gland, devoid of a protective flow of secretions, may become infected by a retrograde extension of mouth organisms through the duct, particularly in the presence of septic oral cavities.

Injury During Anesthesia

Another possible etiologic factor in inflammation of the parotid gland is the injury that may be done to the gland by the forcible holding forward of the jaw by the anesthetist during anesthesia. Firm pressure back of the ramus of the mandible for an hour or more may injure the parotid gland and devitalize it to the extent that it becomes a fertile soil for the growth of infection.

—From *Journal of the American Medical Association* 136:2 (January 3) 1948.



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